REMARKS/ARGUMENTS

The office action of August 19, 2008 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested. Claims 2 and 4-6 remain pending in this application. Claims 1 and 3 have been previously withdrawn.

Rejections under 35 U.S.C. § 103

Claims 2 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of U.S. publication no. 2001/0045979 to Matsumoto et al. ("Matsumoto") and U.S. patent no. 6,104,837 to Walker. Applicant respectfully traverses this rejection.

The action alleges that Matsumoto discloses all the features of independent claim 4, but for embedding the depth map in a portion of a video signal including the 2D image data. To overcome this deficiency, the action relies on Walker.

The action solely points to para. [0007] of Matsumoto to show the steps of 1) receiving, from an external source, 2D images and depth map data of a depth map relating to the 2D images; and 2) transmitting the video signal, wherein the transmitted video signal is configured to convert the 2D images for viewing in a stereoscopic viewing system. This portion of Matsumoto describes prior art JP publication no. Sho 55-36240 rather than any development of Matsumoto. Indeed, the development of Matsumoto described in the detailed description actually teaches away from the claim 4 invention as seemingly recognized by the Office in their exclusive reliance on para. [0007] of Matsumoto. As the action really relies on the characterizations of JP 55-36240 in Matsumoto, applicants are obtaining a translation of JP 55-36240 and will submit the same in the immediate future to aid the examination. Also, applicants submit that the rejection is actually based on the combination of JP 55-36240 and Walker and will address the rejection accordingly.

In sum, JP 55-36240 (Osada) receives a separate and independent signal containing the depth information "e2". Thus, Osada requires additional bandwidth over and above a standard television signal to receive television image signals and depth information signals. That is, Osada requires frequency bandwidth for one image *plus* frequency bandwidth for depth information. See forthcoming translation, p. 10, lines 8-10. As amended, claim 4 calls for, among other

features, receiving, *in a single channel* from an external source, 2D images and depth map data of a depth map relating to the 2D images. Applicants submit that the Osada system requires that depth information and the 2D image data are received separately, thus requiring more than one channel. For at least this reason, Osada does not teach or suggest receiving, *in a single channel* from an external source, 2D images and depth map data of a depth map relating to the 2D images. Walker fails to cure this deficiency of Osada.

Walker is deficient in other respects.

Walker discloses a compression method and apparatus for use in image data processing where two-dimensional pixel images have respective relative depths specified on a per pixel basis. Contextually, Walker relates to an application in which "two or three planar images form the component material with each of the images having a respective absolute depth value defined for substantially all of the pixels." (Col. 1, lines 18-21). There are important issues relating to the use of depth maps in this context.

1. There are multiple image planes, each with an associated depth map.

2. The depth map does not fully cover the entire image for each plane (e.g. "substantially"). For example, if an image plane encodes a vehicle as described in the detailed description (Col. 4, lines 21-26) then the depth map only covers the section of the image plane in which the vehicle is visible.

3. The depth value of each pixel is only used to determine which pixels from the multiple layers are visible to the user. "The STB is then responsible for generating the composite image of vehicle sprites overlying the server-supplied video background" (Col. 4, lines 29-31). That is, Walker is effectively only providing the respective depth of each frame so that a user is able to determine which objects are in the foreground and which objects are in the background.

Issue 3 is particularly pertinent when considering the use of a depth map for rendering stereoscopic images. The depth compression scheme proposed by Walker *reduces* the amount of information stored in the depth data (the volume of depth data) relative to the application of combining multiple image planes. Notably, the compression techniques described in Walker are not compatible for applications in which the depth maps are used for stereoscopic rendering such as Osada.

First, Walker describes assigning a common depth value to adjoining pixels of similar depth (Col. 2, lines 12-14). This technique has the undesirable effect of removing the 3D surface relief of objects and making those objects appear flat in stereoscopic 3D. Moreover, the

compression utilized by Walker includes reassigning the depth values (Col. 2, lines 21-26); this process is designed to compress the information into the smallest number of bits for encoding. While the compression process has no impact on the ordering of the image planes in the context of Walker's invention, for stereoscopic 3D the compression process would effectively collapse the overall depth range down, leading to very shallow, low quality 3D stereoscopic effect. Significantly, the compression is "lossy" in the sense that vital 3D geometric information is discarded in order to compress the data making it unsuitable for stereoscopic rendering. In view of the foregoing, Walker clearly does not teach or suggest embedding the depth map data in a portion of a video signal including the 2D image data which does not obscure or overwrite the 2D image data, and *without loss of fidelity in a relative range of values in the depth map* as recited in amended claim 4.

As such, the combination of Osada and Walker even assuming, but not conceding, its propriety would not have resulted in the claim 4 combination of features including receiving, *in a single channel* from an external source, 2D images and depth map data of a depth map relating to the 2D images and embedding the depth map data in a portion of a video signal including the 2D image data which does not obscure or overwrite the 2D image data, and *without loss of fidelity in a relative range of values in the depth map*. Moreover, one skilled in the art would not have modified Osada with Walker as suggested because of the undesirable result of the compression, which would effectively collapse the overall depth range down, leading to very shallow, low quality 3D stereoscopic effect. For at least the reasons set forth above, claim 4 and claim 2, which depends from claim 4, are patentably distinct from the combination of Osada (Matsumoto) and Walker.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Matsumoto, Walker, and U.S. patent no. 5,806,005 to Hull et al. ("Hull"). Applicant respectfully traverses this rejection.

Claim 5 depends from claim 4. Hull does not remedy the deficiencies discussed above regarding claim 4 with respect to Osada (Matsumoto) and Walker. As such, claim 5 is patentably distinct from the applied art.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Matsumoto, Walker, and U.S. patent no. 6,370,262 to Kawabata. Applicant respectfully traverses this rejection.

Amended claim 6 calls for, among other features, receiving *in a single channel* 2D images and depth map data of a depth map relating to the 2D images, and embedding the depth map data in a portion of a video signal including the 2D image data which does not obscure or overwrite the 2D image data, and *without loss of fidelity in a relative range of values in the depth map*. For substantially the same reasons as discussed with respect to claim 4, Osada (Matsumoto) and Walker do not teach or suggest these features. Notably, Kawabata fails to cure at least these defects of Osada (Matsumoto) and Walker. Thus, the combination of Osada (Matsumoto), Walker and Kawabata, even if proper, does not result in the claim 6 combination of features.

CONCLUSION

If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

All rejections having been addressed, applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same.

Respectfully submitted,

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Dated: December 19, 2008

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